THRESHOLD DETERMINATIONS FOR CAA SECTION 112(R)

Purpose

This Meteorology and Air Quality Group (MAQ) procedure describes the process for reviewing and evaluating chemical procurement records and performing threshold determinations for Clean Air Act (CAA) Section 112(r) toxic and flammable substances.

Scope

This procedure applies to the identification and quantification of regulated 112(r) toxic and flammable substances at Los Alamos National Laboratory (LANL). This procedure is not intended to describe the requirements of the Risk Management Program (RMP) in the event that LANL exceeds 112(r) threshold quantities (TQs), nor to instruct on compliance with the General Duty Clause.

In this procedure

Hazard Control Plan

The hazard evaluation associated with this work is documented in MAQ-Office.

Signatures

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09/23/04

General information about this procedure

Attachments

This procedure has no attachments.

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description of Changes
0	1/19/00	New document.
1	9/17/04	Revision of process to reflect new database and clarification on process for chemical procurement tracking.

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- MAQ personnel assigned to track 112(r) regulated substances procured, used, and/or stored at LANL.

Training method

The training method for this procedure is "**self-study**" (**reading**) and is documented in accordance with the procedure for training (MAQ-024).

Definitions specific to this procedure

Articles: Manufactured items formed to specific shapes or designs that do not release or result in exposure of regulated substances under normal conditions of processing and use.

CAS numbers: Chemical Abstracts Service number that identifies chemicals.

Process: Any activity involving a regulated substance, including any use, storage, manufacture, handling, or onsite movement of such substances, or combination of these activities. Also any interconnected group of vessels or separate vessels that are located such that a regulated substance could be involved in a potential release must be considered a single process.

References

The following documents are referenced in this procedure:

- CAA Section 112(r), "Prevention of Accidental Releases"
- 40 CFR 68, "Chemical Accident Prevention Provisions"
- MAQ-024, "Personnel Training"
- MAQ-309, "Chemical Procurement Tracking"
- MAQ-OP, "Quality Assurance Project Plan for the Operating Permit"
- MAQ-Office, "General Office Safety, Security, and Computer Responsibilities for All Employees"

Reporting requirements and applicability

Regulatory driver

In 1990, Congress amended the CAA by adding Section 112(r), Prevention of Accidental Releases. Section 112(r) requires the Environmental Protection Agency (EPA) to establish a risk management program (RMP) to prevent accidental releases of flammable and toxic substances to the environment and to minimize the consequences in the event of a release. EPA established the requirements for the RMP in 40 CFR 68 that became effective on June 21, 1999. This program lists both toxic and flammable substances and their associated threshold quantities (TQs). Any process or storage facility that has any listed substance on-site in quantities exceeding the TQ is subject to EPA's RMP. Under the 112(r) program, the threshold determinations are based on the quantity of substance present at a particular location or in a particular process at any point in time (i.e., what is the potential for release during an accident) and not on the cumulative usage.

Applicability status

LANL did not exceed any TQ on June 21, 1999, and therefore, was not subject to the RMP and was not required to register with EPA. LANL will continue to evaluate chemical procurements, review new sources, and track known processes containing regulated substances to determine any change in the applicability status of the RMP.

Implementation schedule

LANL can become subject to the EPA's RMP rule by one of two mechanisms:

- EPA adds a new regulated substance or lowers the TQ threshold.
- LANL exceeds a TQ for a regulated substance.

In the event that LANL becomes subject to the EPA's RMP rule, LANL must comply by the later of the following dates:

- Three years after the date on which a regulated substance is first listed.
- The date on which a regulated substance is first present above a threshold quantity. Note that there is no grace period.

Threshold determinations

Conservative TQs

To be conservative, the threshold determinations are evaluated against 75% of the TQs. This conservatism will allow LANL to identify TQ exceedances in advance.

Frequency of the threshold determinations

Perform threshold determinations regularly and frequently enough, but not less often than bi-weekly, to provide reasonable confidence that a TQ will not be exceeded unexpectedly. The 112(r) applicability is not required during periods of LANL shutdown such as holiday closures when no programmatic work is performed.

Drill down approach

Because there are numerous processes at LANL that use 112(r) substances, the group has adopted a "drill down" approach to determine initial thresholds. This process is described in the steps below.

Steps to determine thresholds

To determine thresholds, perform these steps:

Step	Action
1	Processes containing regulated chemicals are evaluated and tracked as described in the Operating Permit Quality Assurance Project Plan (MAQ-OP). • Open the "112R Compliance" Access database located on the Databases drive at "\\ChemComp\Chemical Management\MS Access Files". • Open the "ACIS Daily lb" table and verify that the number of records equals the total number of records from the Chemlog daily download (as described in procedure MAQ-309, "Chemical Procurement Tracking") for that particular day.

Steps continued on next page.

Threshold determinations, continued

Step	Action
2	Compare the quantity of each regulated substance to the TQs (the list of 112(r) toxic and flammable substances and TQs are in 40 CFR §68.130 and are located in the "112R Compliance" Access database in tables "112r_Toxics_list CAS" and "112r_Flam_list CAS") by running the following reports: • 112r Toxics Status by Facility • 112r Flammables Status by Facility. The reports list all purchases that match CAS # of 112(r) toxic and flammable substances, active, and includes all dates in Chemlog. For those 112(r) substances that are on-site (at LANL) in quantities below 75% of the TQ, the threshold determination is complete. Go to step 6.
3	Refine the analysis by comparing the quantity of each regulated substance by technical area (TA) and building. If the totals of a 112(r) substance for each TA and building are below 75% of the TQ, the threshold determination is complete. Go to step 6. • 112r Toxics Status by TA/Bldg • 112r Flammables Status by TA/Bldg
4	If the quantity of a regulated substance in a building is above 75% of the TQ, one or more of the following may be performed (follow the process for these additional steps in the next chapter *Detailed data evaluations*): • Exemptions analysis • Evaluation of concentration qualifiers • Evaluation of mixtures • Evaluation of inventory data entry • Inventory updates • Compilation of chemical totals by process
5	After performing any of the above-listed detailed data evaluations, start over at step 1 to determine thresholds. If all the additional data evaluations (bullets in step 4) have been exhausted and the quantity of a regulated substance in a building potentially approaches the TQ, notify the Title V Operating Permit Project Leader. The Title V Operating Permit **Project Leader** will initiate the implementation of the RMP rule.

Steps continued on next page.

Threshold determinations, continued

Step	Action
6	Document the threshold determinations by collecting one of the following sets of records: • Dated and initialed records to demonstrate that the drill-down approach was implemented and that no TQs were exceeded. or • Dated and initialed notification to the Title V Operating Permit Project Leader of potential exceedances with supporting documentation from the threshold determinations.

Detailed data evaluations

Maintaining TQ lists

Whenever there is a change made to the list of 112R toxic and flammable substances in 40 CFR §68.130, the "112r_Toxics_list CAS" table and the "112r_Flam_list CAS" table in the "112R Compliance" Access database are updated to include the changes.

Detailed threshold determinations

When referred to this chapter from step 4 in the previous chapter (i.e., if the initial threshold determinations are above 75%), follow one or more of the blocks in this chapter.

Exemptions analysis

Repeat threshold determinations and exclude substances that meet the descriptions below as these substances are exempt per 40 CFR §68.115. The current exemptions include the following:

- Regulated substances contained in articles
- Structural components
- Products for routine janitorial maintenance
- Employee's food, drugs, cosmetics or other personal items
- Process water or non-contact cooling water as drawn from the environment or municipal sources
- Air used as compressed air or as part of combustion
- Regulated substances used in laboratory activities[1] under the supervision of a technically qualified individual
- Regulated substances in gasoline when in distribution or related storage for use as a fuel for internal combustion engines
- Regulated toxic substances in a mixture in a concentration of less than 1% by weight
- Regulated toxic substances[2] in a mixture in a concentration of 1% or greater if it can be demonstrated and documented that the partial pressure is less than 10 mm Hg (see section on "Evaluation of mixtures of toxic substances" for further analysis)
- Regulated flammable substances in a mixture in a concentration of less than 1% by weight
- Regulated flammable substances in a mixture in a concentration of 1% or greater if it can be demonstrated and documented that the mixture does not have a National Fire Protection Association (NFPA) flammability hazard rating of 4 (see section on "Evaluation of mixtures of flammable substances" for further analysis).

[1] The laboratory activities exemption does not apply to specialty chemical production, pilot plant scale operations, or activities conducted outside the laboratory.

Detailed data evaluations, continued

Evaluation of concentration qualifiers

Repeat threshold determinations and exclude substances that are present in mixtures below the concentration qualifiers that are listed in 40 CFR §68.130.

Evaluation of mixtures of toxic substances

When the concentration of a listed **toxic** substance is greater than or equal to 1% by weight of the mixture, the following rules apply:

- If the partial pressure of the substance in the mixture or solution is greater than or equal to 10 mm Hg at any handling and storage condition, then include the quantity of the listed substance contained in the mixture at those portions of the process.
- If the partial pressure of the substance in the mixture or solution is less than 10 mm Hg throughout all handling and storage conditions, the substance does not need to be included in the threshold determination.
- If the partial pressure cannot be measured or estimated and documented that it is less than 10 mm Hg, then include the listed substance contained in the mixture at those portions of the process.
- For oleum, toluene 2,4-diisocyanate, toluene 2,6-diisocyanate, and toluene diisocyanate (unspecified isomers), include the listed substance contained in the mixture regardless of the vapor pressure.
- For aqueous mixtures with concentration qualifiers, the quantity of the regulated substance in the mixture must be accounted for in the threshold determination only if the concentration equals or exceeds the specified minimum concentration. Account for only the quantity of regulated toxic substance in the aqueous solution.

Evaluation of mixtures of flammable substances

When the concentration of the listed **flammable** substance is greater than or equal to 1% by weight of a mixture, the following rules apply:

- If the mixture has a NFPA flammability hazard rating of 4, the entire quantity of the mixture is treated as the regulated substance and must be included in the threshold determination.
- If it can be documented that the mixture does not have an NFPA flammability hazard rating of 4, then the entire quantity of the mixture need not be considered in the threshold determination.

[2] This exemption does not apply to oleum, toluene 2,4-diisocyanate, toluene 2,6-diisocyanate, and toluene diisocyanate (unspecified isomer).

Detailed data evaluations, continued

Evaluation of inventory data	Evaluate the inventory for suspected data entry errors. Correct the suspect data with the inventory custodians and repeat the threshold determinations.
Inventory updates	Update a building's chemical inventory by performing a wall-to-wall chemical inventory. After the inventory, repeat the threshold determinations.
Compilation of chemical totals by process	Identify chemical inventories for individual processes and repeat the threshold determinations.

Records resulting from this procedure

Records

The following records generated as a result of this procedure are to be submitted as records to the records coordinator:

- Results from threshold determinations
- Description of calculations
- Annotated process description and list of deviations and assumptions, as appropriate, that will allow duplication of the analysis

Click here to record “self-study” training to this document.